Section 11 - West Colorado River Basin
Drinking Water

Section 11
West Colorado River Basin - Utah State Water Plan

Drinking Water

11.1 Introduction [16]

This section discusses the public and private water supplies in the West Colorado River Basin and reviews the systems and their conditions.

State of Utah Administrative Rules for Public Drinking Water Systems, R309-300 through R309-211, define a public water system (PWS) as one that has at least 15 connections or serves an average of at least 25 people at least 60 days per year. This distinguishes between public and private water systems, which include self-supplied industrial facilities and individual home wells or springs.

All public water systems are further categorized into three different types: community (CWS), non-transient non-community (NTNCWS), and transient non-community (TNCWS). The CWSs and NTNCWSs are more strictly regulated because of the rationale that the same people are impacted every day by the system's water quality. The CWSs are those that serve at least 15 service connections used by year-round residents or those that regularly serve at least 25 year-round residents. The NTNCWs serve at least 25 of the same non-resident persons per day for more than six months per year, such as students at a school. The TNCWs generally impact different people every day. Examples include campgrounds or food establishments whose staff number does not exceed 25.

Culinary water is always in demand and vigilance is needed to assure a high quality supply. Expected growth in the basin will require development of additional supplies of potable water.

However, vigilant protection of spring and well recharge zones is necessary to avoid contamination. It is expected that future culinary water demand will be met from surface and groundwater supplies.

The amount of culinary water used for irrigating lawns and gardens can substantially

Price Water Treatment Plant

11.2 Setting [16, 21]

Surface water sources require mechanical treatment to meet state approval. The earliest basin settlers developed high water quality springs and wells to supply safe and reliable culinary water to communities. The water from springs has remained relatively high in quality.

increase the daily culinary water use. In the West Colorado River Basin, outside culinary water use is about 35 percent of the total. Substitution of non-potable (secondary) water for outside use in many communities has significantly alleviated culinary water demand.

The Division of Water Resources recently conducted a municipal and industrial water study to obtain more detailed data of current use and source capacity. This includes residential uses inside and outside the home, as well as commercial, institutional and industrial uses. Data are shown in Table 11-1. Figure 11-1 shows the locations of the community water systems in the basin.

As can be seen, some communities have reached the limit of their source and/or system capacity. When the demand for water deliveries increases, more water will need to be diverted from existing supplies, or supplemental water sources will need to be developed.

The per capita use for each CWS as shown in Table 11-2 varies from community to community. Much of this can be attributed to whether culinary water or non-culinary water is used for outside irrigation. Water consumption at different times of the year also varies as there is typically more outside use during the summer months than during the winter.

The 1996 basin-wide average culinary water use in gallons per capita per day (gpcd) was 253 gpcd (Figure 11-2). The statewide average was 268 gpcd in 1998. The use in the basin's cities and towns ranges from 92 gpcd for Trail Canyon Residential System in Emery County to 740 gpcd for Torrey Culinary Water System in Wayne County. The reason for the basin's lower per capita rate relative to the statewide average is that many communities utilize available secondary for outside watering. The combined secondary water and culinary water use is 449 gpcd, which is higher than the statewide average of 324 gpcd.

Total basin culinary use including public community, public non-community, private domestic and self-supplied industrial water systems is 14,601 ac-ft per year. (See Table 11-3.) About 60 percent of this is supplied by surface water treatment plants operated by Price City, Price Water Improvement District, Green River City and Castle Valley Special Service District. The remainder is served through wells and springs.

11.3 Local Regulatory Organizations

All public drinking water supplies are subject to the Utah Safe Drinking Water Act and the Utah Administrative Rules for Public Drinking Water Systems. Federal regulations and state rules are administered by the Utah Department of Environmental Quality, Division of Drinking Water.

The intent of the Safe Drinking Water Act (SDWA) is to encourage states, local governments and water companies to be proactive and to ensure all water systems are capable of maintaining and protecting the supply of safe drinking water at an affordable cost.

The federal government authorized over $12.5 million for Utah to be used starting in 1997 in a Drinking Water State Revolving Fund (DWSRF) program. The state has the responsibility to prepare an intended use plan (IUP), which is a prioritized list of eligible applicants to use this funding. Interim guidelines from the federal government have been given to the states, which define how this money and future funding is to be allocated.

The State Division of Drinking Water (DDW), working with Rural Water Association of Utah (RWAU), American Water Works Association (AWWA) Intermountain Section, and the local health departments (LHDs) assisted each county in preparing regional water management plans. These plans were completed in 1999. They are intended to be updated every 10 years. Once regional boundaries have been established by the county planners, water companies within each region were notified of the planning agenda and allowed to become a party to this planning process.

Personnel from DDW, RWAU or AWWA, and any affected LHD met with local county officials and gave initial guidelines and interim input concerning the scope of the study to be completed. Generally, private consulting engineering firms were then be employed by the county or association of

Table 11-1
Public Community Water Supply and Use

Water Supplier	Total Source Capacity (acre-feet)	Reliable Source Capacity (acre-feet)	Current M&I Use (acre-feet)
CARBON COUNTY			
East Carbon City	672	384	384
Helper Municipal Water System	2,482	1,043	933
Price City Water	3,548	2,997	2,997
River View	NA	NA	31
Price River Water Improvement District	6,720	2,949	951
Non-Public Water Companies[1]	NA	NA	81
Carbonville Water Company	NA	NA	59
East Carbonville Water Company	NA	NA	22
South Price Water Company	NA	NA	64
Spring Glen Water Company	NA	NA	132
Wellington Culinary Water	NA	NA	380
Scofield Town	35	18	10
Sunnyside City Water	672	279	234
CARBON COUNTY TOTALS	14,109	7,670	6,278
EMERY COUNTY			
Castle Valley Special Service District [2]	5,200	2,320	1,726
Green River Municipal Water	1,680	720	502
North Emery Water Users	575	269	228
Trail Canyon Residents	19	12	12
EMERY COUNTY TOTALS	7,474	3,320	2,468
WAYNE COUNTY			
Bicknell Culinary Water System	141	66	61
Caineville Special Service District	44	19	17
Capitol Reef National Park	40	18	10
Fremont Waterworks Company, Inc.	210	105	105
Hanksville Culinary Water Works	129	57	39
Loa Water Works Company	355	166	166
Lyman Culinary Water System	97	45	34
Teasdale Special Service District	129	78	78
Torrey Culinary Water System	452	290	290
WAYNE COUNTY TOTALS	1,597	843	800
GARFIELD COUNTY			
Boulder Farmstead Water Company	181	76	65
Cannonville Town	161	71	36
Escalante Town	2,534	1,092	324
Henrieville	65	33	19
Tropic	323	140	108
GARFIELD COUNTY TOTALS	3,263	1,412	548
KANE COUNTY			
Church Wells Special Service District	387	164	41
Glen Canyon SSD #1 (Big Water)	300	189	189
Glen Canyon-Bullfrog (National Park Service)	300	189	189
KANE COUNTY TOTALS	1,816	830	415
WEST COLORADO RIVER BASIN TOTALS	28,258	14,075	10,509

[1]Price River Water Improvement District delivers water to Brotherson Water Co., Carbon County Industrial Park, Central Trailer Park, Lessar Water Co., Machello Water Co., Pillings Trailer Park, Pinnacle Peak Water Co., North Blue Cut Water Co., South Hwy. Water Co. and Thomas Trailer Park.
[2]Delivers water to the communities of Clawson, Cleveland, Elmo, Emery, Ferron, Huntington and Orangeville.
Note: Totals do not include uses outside public community supplier areas. Current data based on 1996 values.
Source: DWRe 1996 West Colorado M&I Water Supply Studies.

CARBON COUNTY
1. East Carbon & Columbia Municipal Water
2. Helper Municipal Water System
3. Price Municipal Water System (River View)
4. Price River Water Improvement District
5. Carbonville Water Company
6. E. Carbonville Water Company
7. South Price Water Company
8. Spring Glen Water Company
9. Wellington Culinary Water
10. Scofield Town
11. Sunnyside City Water

EMERY COUNTY
12. Castle Valley Special Service District
13. Green River Municipal Water
14. North Emery Water Users
15. Trail Canyon Residential System

WAYNE COUNTY
16. Bicknell Culinary Water System
17. Cainenville Special Service District
18. Capitol Reef National Park
19. Fremont Waterworks Company, Inc.
20. Hanksville Culinary Water Works
21. Loa Water Works Company
22. Lyman Culinary Water System
23. Teasdale Special Service District
24. Torrey Culinary Water System

GARFIELD COUNTY
25. Boulder Farmstead Water Company
26. Cannonville Town Water
27. Escalante Culinary Water
28. Henrieville
29. Ticaboo Special Service Dist. #1
30. Tropic

KANE COUNTY
31. National Park Service, Bullfrog Rec. Site
32. Church Wells Special Service District
33. Glen Canyon Special Service District #1 (Big Water)

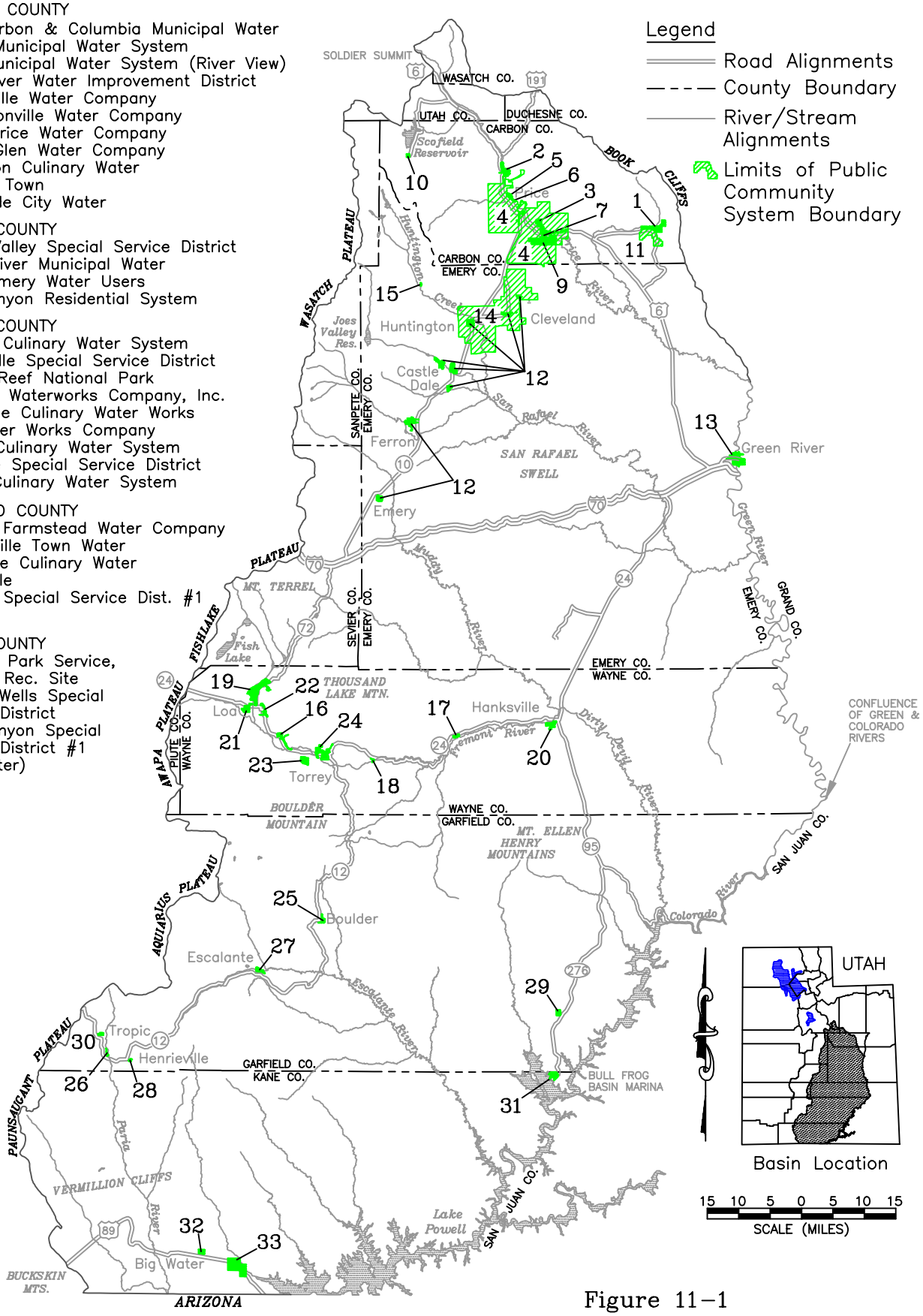
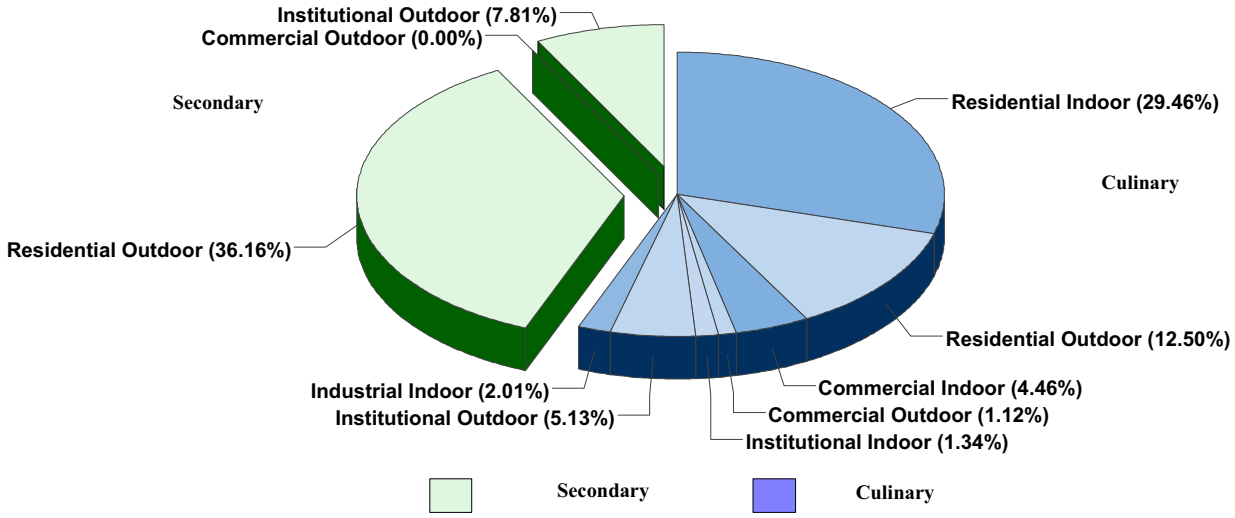


Figure 11–1
PUBLIC COMMUNITY SYSTEM BOUNDARIES
West Colorado River Basin

Figure 11-2

WEST COLORADO RIVER BASIN
PER CAPITA WATER USE
(Percent of Total)



WATER USE CATEGORY
PER CAPITA WATER USE
(gpcd)

Culinary	
Residential Indoor	132
Residential Outdoor	58
Commercial Indoor	20
Commercial Outdoor	5
Institutional Indoor	6
Institutional Outdoor	23
Industrial Indoor	9
Sub-Total	**253**
Secondary	
Residential Outdoor	161
Commercial Outdoor	0
Institutional Outdoor	35
Sub-Total	**196**
TOTAL	**449**

Total Per Capita	
Residential	**351**
Commercial	**25**
Institutional	**64**
Industrial	**9**
Sub-Total	**449**
TOTAL	**449**

Table 11-2
Culinary Water Diverted Per Capita Day

Water Supplier	Population	Per Capita Use (Gallons)
CARBON COUNTY		
East Carbon City	1,270	270
Helper Municipal Water System	2,350	354
Price City Water	8,712	307
River View	250	110
Price River Water Improvement District	3,800	223
Non-Public Water Companies	450	160
Carbonville Water Company	300	176
East Carbonville Water Company	175	113
South Price Water Company	553	103
Spring Glen Water Company	800	148
Wellington Culinary Water	1,632	208
Scofield Town	92	95
Sunnyside City Water	400	523
CARBON COUNTY TOTALS	20,784	270
EMERY COUNTY		
Castle Valley Special Service District*	8,055	191
Green River Municipal Water	1,500	299
North Emery Water Users	1,500	136
Trail Canyon Residents	112	92
EMERY COUNTY TOTALS	11,167	197
WAYNE COUNTY		
Bicknell Culinary Water System	390	141
Caineville Special Service District	40	368
Capitol Reef National Park	57	161
Fremont Waterworks Company, Inc.	250	374
Hanksville Culinary Water Works	170	203
Loa Water Works Company	500	296
Lyman Culinary Water System	200	151
Teasdale Special Service District	175	399
Torrey Culinary Water System	350	740
WAYNE COUNTY TOTALS	2,132	335
GARFIELD COUNTY		
Boulder Farmstead Water Company	150	387
Cannonville Town	156	208
Escalante Culinary Water	1,050	276
Henrieville	180	94
Tropic	396	243
GARFIELD COUNTY TOTALS	1,932	257
KANE COUNTY		
Church Wells SSD	105	344
Glen Canyon SSD #1 (Big Water)	450	368
Glen Canyon - Bullfrog Recreation Site	800	211
KANE COUNTY TOTALS	1,355	274
WEST COLORADO RIVER BASIN TOTAL	37,370	253

*Delivers water to the communities of Clawson, Cleveland, Elmo, Emery, Ferron, Huntington and Orangeville.
Note: Data based on 1996 values.

Table 11-3
Total Culinary Use

Public Suppliers	Carbon	Emery	Garfield	Kane	Sanpete	Sevier	Wayne	Utah	Total
	(acre-feet per year)								
Community Systems	6,278	2,468	601	416	0	0	800	0	10,563
Non-Community Systems	31	6	4	5	2	17	7	1	73
Private Domestic Systems	160	5	25	20	0	5	65	0	280
Self-Supplied Industrial	2,579	1,103	3	0	0	0	0	0	3,685
TOTALS	9,048	3,582	633	441	2	22	872	1	14,601

governments to complete the water management plan.

The Drinking Water Board authorized $900,000 to fund the regional water management plans in 1998 and 1999. In addition, the Community Impact Board and Community Development Block Grant Board are each currently considering funding $250,000 to this planning effort.

Regional water management plans analyze every community water system and non-transient non-community water system with respect to source protection, operator certification, monitoring, managerial, financial, and technical capabilities. Alternatives such as joint source protection studies, joint use of operators, managers, equipment and facilities, existing and proposed, as well as consolidation of water systems are also considered.

Local owners of each water company will have the opportunity to accept or reject the recommendations of the regional water plan. If a water company is not in compliance with state rules and federal regulations, and is not willing to accept the options to be in compliance as presented in the regional planning report, the water company will not be eligible for Drinking Water State Revolving Fund programs.

Information from the regional water management plans will be used to prepare an intended use plan. The intended use plan will be: (1) Prepared by the state with recommendations from local officials, (2) updated annually, and (3) subject to public comment procedures. This plan will indicate who is eligible and the priority of each project to be funded by the DWSRF.

The Division of Drinking Water serves as staff for the Drinking Water Board to assure compliance with the standards. At the local level, considerable reliance is placed on public water supply operators.

11.4 Drinking Water Problems

The demand for high quality drinking water and the potential for contamination of drinking water supplies will increase as the population increases. About one-half of the drinking water delivered in the basin is pumped from groundwater aquifers, so culinary water delivery could be impacted by declining groundwater quality.

The North Emery Water Users Association is carefully monitoring its source springs because of possible groundwater interference by local mining companies. This relates to quantity and quality of the groundwater supply.

Problems can originate from several sources. One source of poor water quality that cannot be

controlled is caused by geologic (background) conditions such as dissolved minerals. Other sources of contamination include human activities such as seepage from landfills, chemical contamination from agricultural activities, mineral exploration, mining, construction and hazardous waste spills.

Public systems are rated by the Utah Division of Drinking Water. Systems with below standard water quality are not approved when no action is being taken to correct the problem. When corrective action is underway, this is indicated in the rating. In the West Colorado River Basin, there are currently no unapproved community or non-community water systems.

11.5 Culinary Water Use and Projected Demand

Population projections for the cities and towns in the basin were made by the Governor's Office of Planning and Budget. (See Section 4). These estimates of future population growth are used to project culinary water needs. Many public water suppliers expect an increased demand in the next 20 to 30 years. Table 11-4 shows the current and projected culinary water diversions for the basin's counties.

Table 11-4
Current and Projected
Culinary Water Diversions[1]

County	Year 1996	2010 (acre-feet)	2020
Carbon	9,048	10,600	11,700
Emery	3,582	4,100	4,300
Garfield	633	800	1,000
Kane	441	600	700
Sanpete	2	3	5
Sevier	22	30	40
Wayne	872	1,100	1,400
Utah	1	1	1
TOTALS	14,601	17,234	19,146

[1]Includes public community and non-community water systems, private domestic and self supplied industries.

11.6 Alternative Solutions

Needed water source development will be a reflection of the basin's population increases. The water needed could come from several sources, including surface water, groundwater and conservation.

It is expected the increased use of culinary water will mostly come from undeveloped water rights and the purchase of agricultural water rights. Future development of the Navajo sandstone groundwater aquifer should be investigated. This is particularly true in Garfield and Wayne counties where considerable use is currently from groundwater (also see Section 19). Surface water will probably provide an increasing proportion of the culinary water supply in Carbon and Emery counties. In order to use developed and undeveloped surface water efficiently, existing treatment plants will need to be enlarged. These water use projections can be used to help determine when new water supplies will be needed to meet future culinary demands. All water suppliers face challenges of water source capacity, storage capacity, legal capacity and distribution system capacity. Suppliers will face ongoing challenges of procuring water rights and maintaining water infrastructure to meet peak daily flow and annual water delivery requirements.

Storage facilities must have sufficient capacity to meet indoor water demands, lawn and garden irrigation needs, and fire flow demands. The water distribution system capacity must be adequate to meet demands at the point of use. Even if there is adequate water at the supply source and storage sufficient to meet peak demands, it will all be for naught if the distribution system is inadequate. During drought years, outside watering could be curtailed. ●